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Moodifier™ Constant Current Driver

Moodifier™ Constant Current Slave

- DIN-rail series -

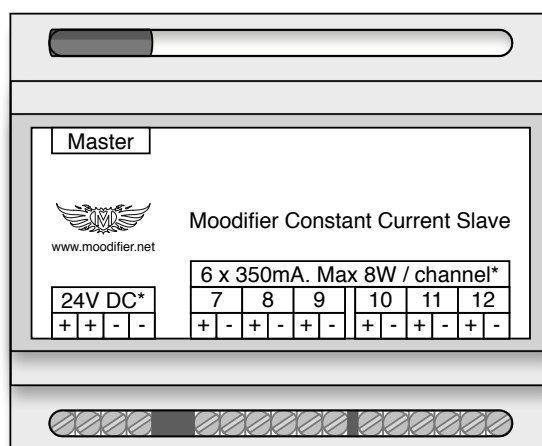
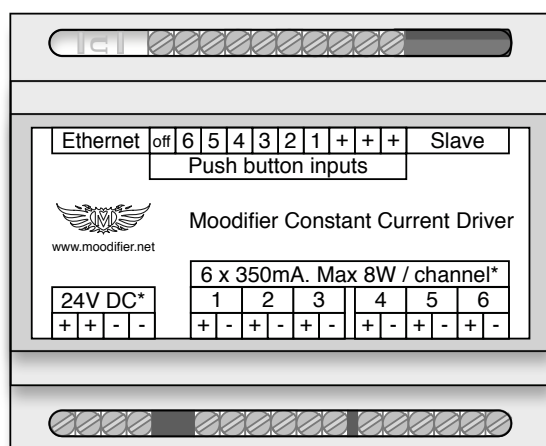


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Moodifier Constant Current Driver & Slave

The Moodifier Constant Current Driver and optional add on Slave unit controls and powers all types of LED lights that are ment to be drivven with 350mA constant current. The Moodifier™ Constant Current Driver & Slave units can power up to 50W each. When combined they can power 100W of LED lights on 12 individually controlled LED channels.

The Moodifier Constant Current Driver and Slave units are easily connected to each other with the included standard flat-cable.

Power supply, network, LEDs and other peripherals may only be connected according to the instructions that are printed on top of the Moodifier Constant Current Driver and Slave units. A faulty installation may cause harm and/or damage.

All Moodifier units should always be installed in a way that ensures good ventilation so that open air can flow freely around the units.

- Do not short circuit any of the LED channels, it could destroy the Moodifier unit and invalidate the guarantee
- Do not mix up the plus and minus poles of the power supply, connecting the power supply with the wrong polarity can destroy the Moodifier unit and invalidate the guarantee
- Moodifier Constant Current Driver and Slave units may only be installed indoors
- Moodifier Constant Current Driver and Slave units may not be installed in wet or damp areas
- Moodifier Constant Current Driver and Slave units may not be encapsulated or enclosed in a way that prevents access to the units

Despite that Moodifier Constant Current Driver and Slave are low voltage and low current units they should always be connected in a proper and professional way. You should always consult an authorised electrician if you are insecure on how the units are to be connected or if you are insecure if you are authorised to connect the units.

Power supply of 12-24 V DC

The Moodifier Constant Current Driver & Slave units are normally powered by 24V DC but they can be powered with 12V DC. The maximum power output will increase with voltage according to:

- 12V DC powers up to 25W of LED light for each unit, and a total of 50W for both Driver and Slave.

Maximum load per LED channel at 12V DC: 0-4.2W

- 24V DC powers up to 50W of LED light for each unit, and a total of 100W for both Driver and Slave.

Maximum load per LED channel at 24V DC: 0-8.4W

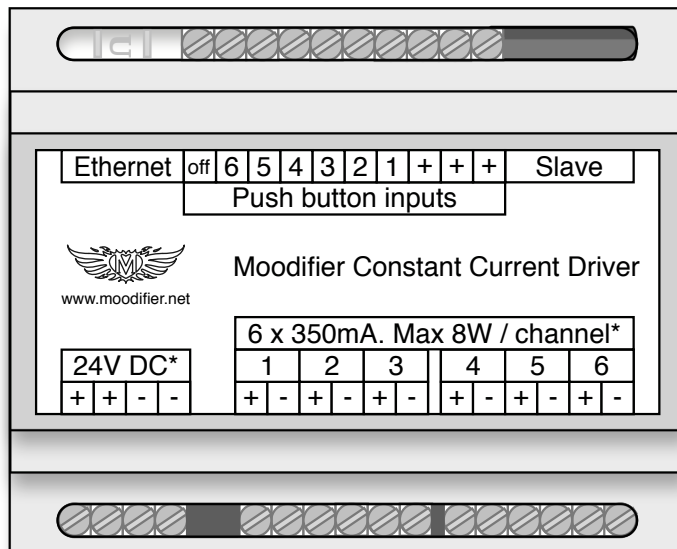
For further information see Technical Specifications.

General descriptions in this manual assume that the units are powered with 24V DC unless stated otherwise.

The DIN-rail mounted Moodifier Constant Current Driver unit

The Moodifier Constant Current Driver has the following connectors

- 1 Network port (Ethernet)
- 4 ports for connecting and daisy chaining a 12-24V DC power supply
- 1 port for connection of a Slave unit
- 10 sockets for connecting up to 6 wall mounted push buttons
- 12 sockets (6 channels) for connecting up to 50W of LED lights or other 350mA constant current powered equipment

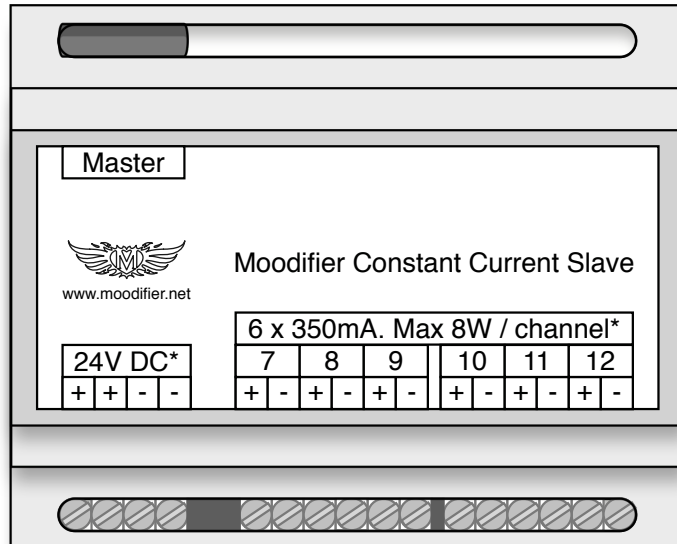


The DIN-rail mounted Moodifier Constant Current Driver unit seen from above with connectors facing up/down.

The DIN-rail mounted Moodifier Constant Current Slave unit

The Moodifier Constant Current Slave has the following connectors:

- 4 ports for connecting and daisy chaining a 12-24V DC power supply
- 1 port for connection to the driver (master) unit
- 12 sockets (6 channels) for connecting up to 50W of LED lights or other 350mA constant current powered equipment



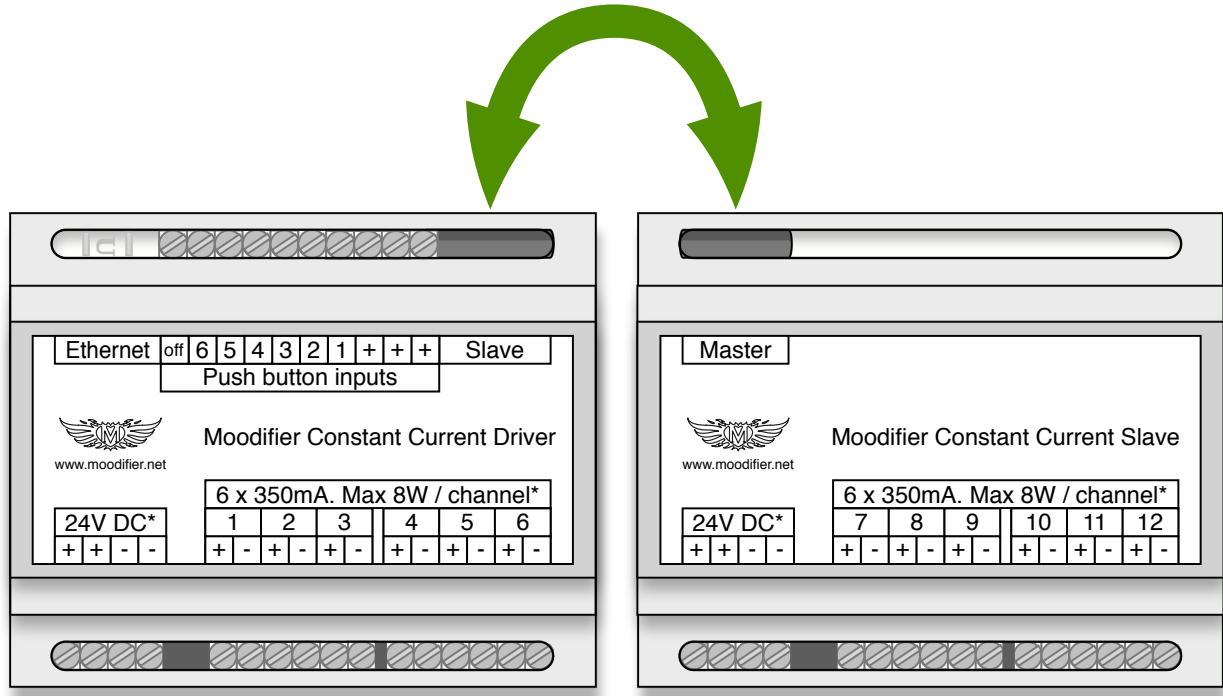
The DIN-rail mounted Moodifier Constant Current Slave unit seen from above with connectors facing up/down.

Main features

- Network (Ethernet 10/100 Base-T)
- 6-12 individually controlled 350mA constant current LED-channels (6 channels on the Driver and 6 channels on the Slave)
- Up to 100W in total, 50W on the Driver unit and 50W on the Slave unit.
- 0-100% dimming in 250 steps
- Variable dim/transition-speeds
- Up to 6 user defined light scenes for wall mounted push buttons
- Pulse width modulated and flicker-free dimming
- Adjustable PWM frequency (480Hz - 4.8kHz)
- Easy to use and feature rich software for controlling lights and create user defined light settings
- Unlimited number of user defined light settings
- Organise light settings in user defined zones
- Automation through scheduling of light settings, by day / time and sunrise / sunset.
- Password protected and easy to use web interface for remote access of all light settings and zones
- Remote control all lights with iPhone, iPad and iPod
- Remote control all lights with Android phones and tablets
- Remote control all lights with any web browser
- Music sync in 100Hz (the lights colour and intensity is synchronised to follow the music in realtime)
- Video and screen sync in 30Hz (the lights colour and intensity is synchronised to the video/screen)
- Automated light shows
- User defined default light setting for power up or after power failure
- Status reporting (ip number, temperature, voltage, PWM frequency, power output per channel)

Master and Slave units.

The Moodifier Constant Current Driver has a socket where you can connect a Slave unit to expand with more channels, more power and more lights. The Slave unit is easily connected with a standard flat cable (included with all slave units).



You can connect 2 types of slave units to the Moodifier Constant Current Driver, a Moodifier Constant Current Slave unit or a Moodifier Constant Voltage Slave unit. This adds great flexibility when designing your lighting since it enables a wide range of options for both constant current and constant voltage based LED lighting.

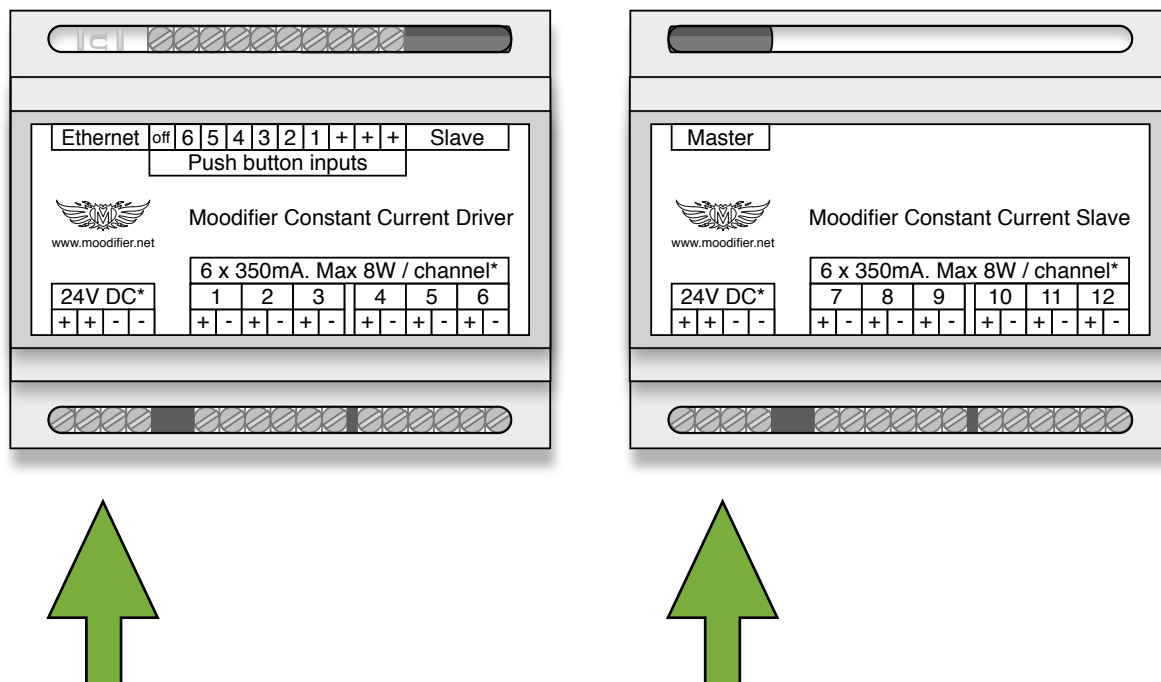
Connecting the power supply

The Moodifier Constant Current Driver and Slave units must be powered by a 12-24V DC power supply (sold separately).

The power supply needs to be able to provide enough power to drive all LEDs and other peripherals that are connected to the device.

The 12-24V DC power supply is easily connected by plugging it in to the appropriate connectors on the Moodifier Constant Current Driver and Slave units.

Do not mix up the plus and minus polarity of the power supply, connecting the power supply with the wrong polarity will destroy the Moodifier units and invalidate the guarantee.



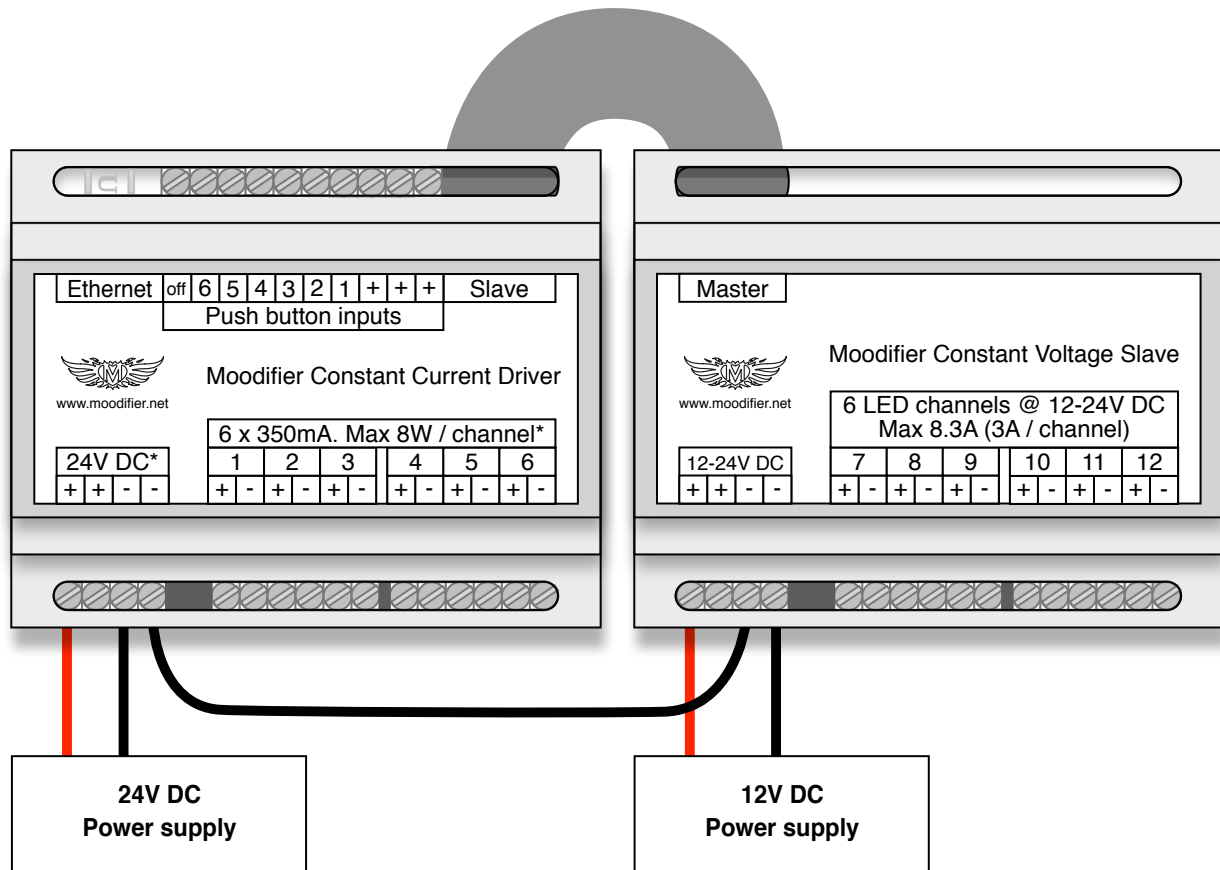
By putting a standard wall switch that cuts the power to the power supply you will get a master power on/off switch for the device. Use the Moodifier application to set the default light setting that is activated whenever the unit is powered up or after power failures.

If you need more sophisticated wall switch you can connect up to 6 wall mounted push buttons to the push button inputs.

Powering master and slave units with different power supplies and/or at different voltages.

Master and slave units that are connected to each other should always use a common ground.

If you need to power an interconnected master and slave unit at different voltages, or using different power supplies of the same voltage, you need to make sure that the two units are commonly grounded. This is easily accomplished by connecting a wire between the two units ground (-) connectors.



Interconnected Master and Slave units running different voltages and power supplies with common grounding.

Connecting a Moodifier Constant Current or Constant Voltage Slave unit

Connecting a Moodifier Constant Current Slave unit will provide 6 extra constant current LED channels.

Connecting a Moodifier Constant Voltage Slave unit will provide 6 extra constant voltage LED channels.

The slave unit can be powered with the same or a different voltage than the Master unit as long as the units use a common grounding. This adds great flexibility when designing your lighting since it enables a wide range of options.

For more information about the Moodifier DIN-rail mounted Constant Current units visit:

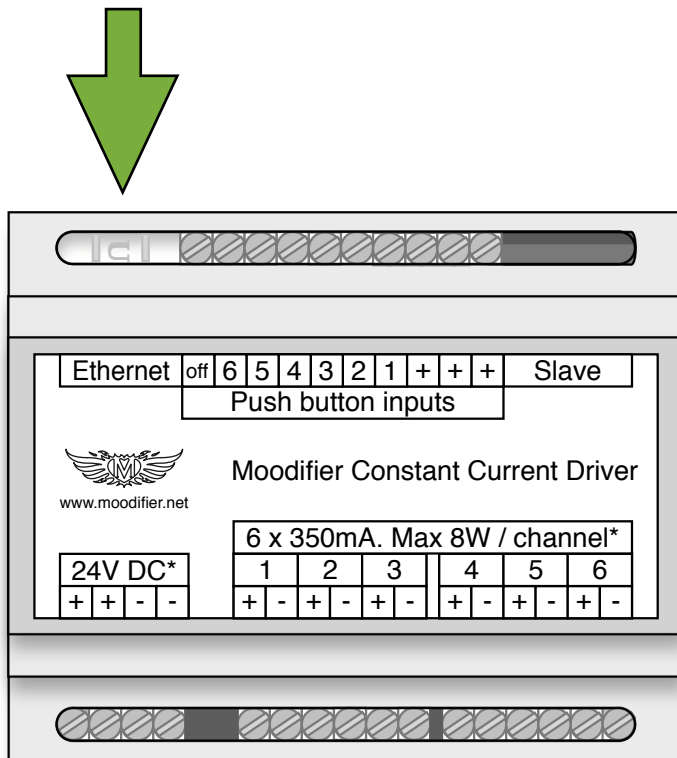
www.moodifier.net/hardware/din-rail-constant-current-driver

For more information about the Moodifier DIN-rail mounted Constant Voltage units visit:

www.moodifier.net/hardware/din-rail-constant-voltage-driver

Connecting to the network (LAN/Internet)

The Moodifier Constant Current Driver connects to the network with a standard ethernet cable. The device may also be connected to a Wifi-network by using a Wifi-adaptor from Netgear¹ (sold separately).



The Moodifier Constant Current Driver will auto-configure itself on the network with DHCP. Once the unit is connected to the network and powered on it will be ready and available on the network. Use the Moodifier application to auto-detect Moodifier devices on the network. Once a Moodifier device is detected on the network you can start to control the lights that are connected to it.

¹ <http://www.netgear.com/home/products/wireless-adapters/high-performance/WNCE2001.aspx>

Connecting LEDs and LED lights

The Moodifier Constant Current Driver and Slave units both have 6 individually controllable LED-channels where LEDs should be connected. Each LED-channel delivers a constant current of 350mA with 8W of power when powered with 24V DC power supply.

LEDs and LED lights should always be connected in series to the positive (+) and negative (-) connectors of the LED-channels on the Moodifier Constant Current Driver and Slave units..

To the right is an image of how different types of LED lights are to be connected to the Moodifier Constant Current Driver.

Common LED lights

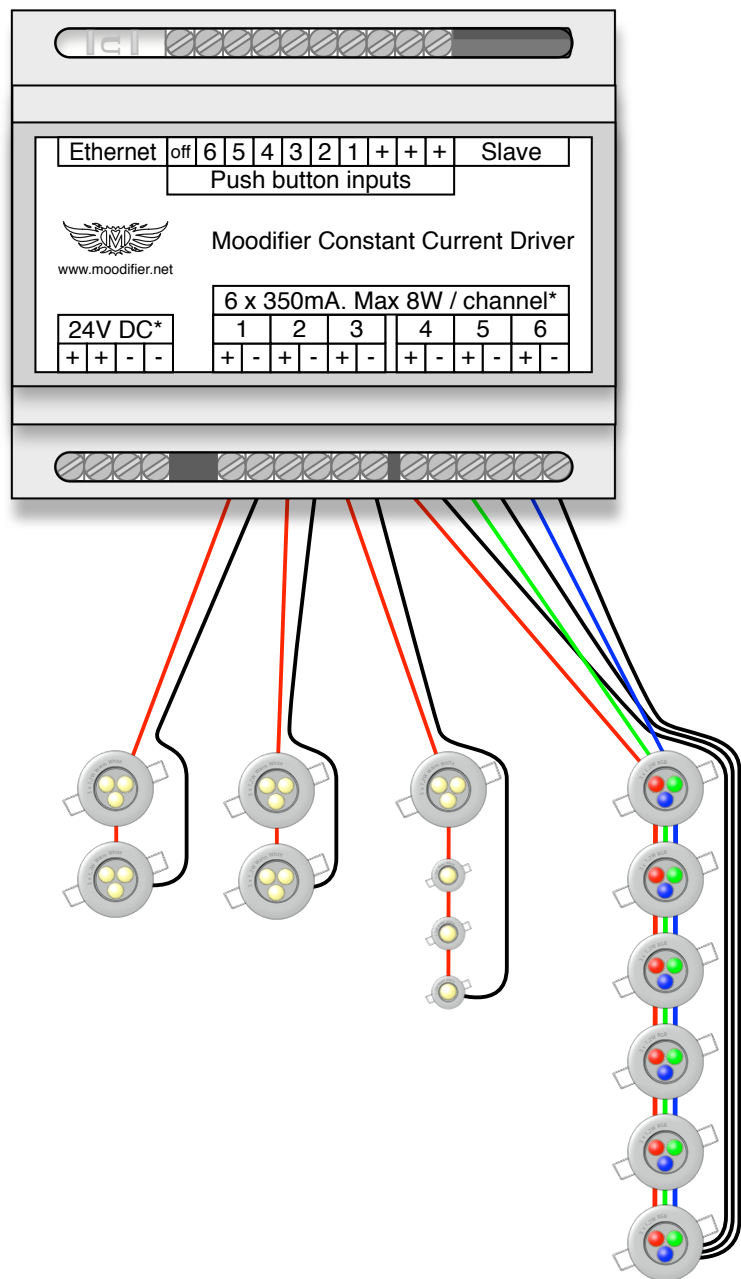
LED stands for "Light Emitting Diode". There are many different types of LEDs. The Moodifier Constant Current Driver and Slave units are compatible with all LEDs that are meant to be driven by constant current at 350mA and above.

350mA constant current has been chosen as a base current by the LED industry and most LEDs are compatible with 350mA.

When choosing LEDs or LED based lights it is still important to check that they are built to be driven by 350mA constant current.

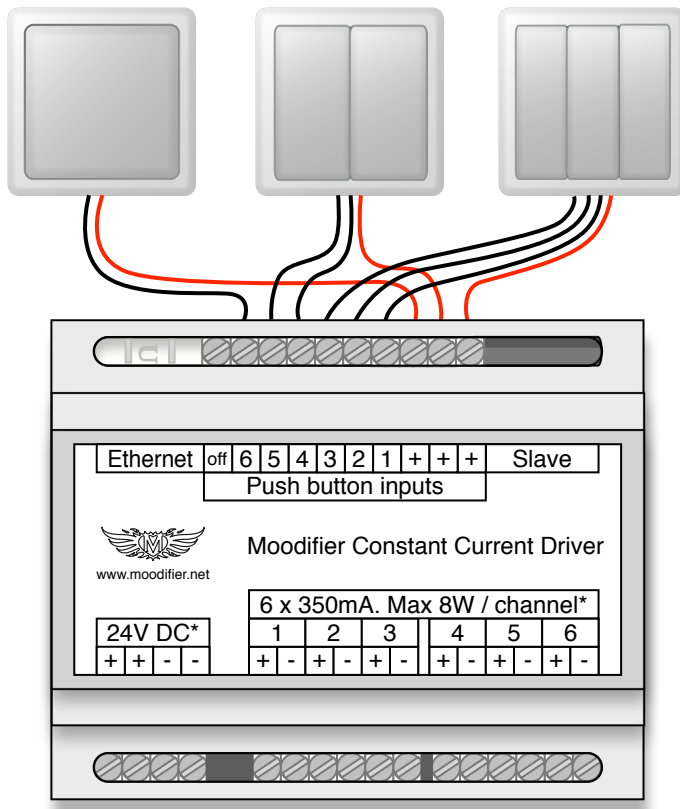
Some LED based lights are rated to be driven with a constant current of 500mA, 550mA, 600mA or 700mA. These LED based lights most often contain exactly the same LEDs as in an LED based light that is rated to be driven with 350mA. The difference between the two is that the LED based light that are rated for higher currents has a larger and more effective heat sink than the lights that are rated to be driven at 350mA. Driving a LED based light that is rated for 700mA with 350mA works just fine in normal situations (it often contains the same LEDs). The lifespan of the LED, when driven at 350mA instead of the higher current, is also greatly extended due to that the LED is running cooler.

LED based lights are available in a plethora of models, shapes and colours, above we have chosen to illustrate a few common types of downlights with a few different combinations of LEDs. Moodifier is also capable of driving many other models of LED based lights.



Connecting wall switches

The Moodifier Constant Current Driver has 10 connectors for connection of up to 6 wall mounted momentary push buttons (normally open). A push on each button activates/de-activates a given light scene. Holding in the push button will enable dimming of the light scenes (0-100%). By default each of the 6 push button inputs will control LED channel 1 through 6, 0-100%, but you can easily use the Moodifier software to define your own custom light scene for any given push button. The set light scenes are remembered after a power cut so there is no need for reset after power failures. The push button inputs enables you to control the Moodifier lighting in a traditional way with standard wall mounted push buttons. The push buttons makes the Moodifier Constant Current Driver fully operational as a stand alone unit if the IP-network goes down or is disconnected.



Moodifier Constant Current Driver with 6 connected push buttons that each activates/de-activates its own light scene.

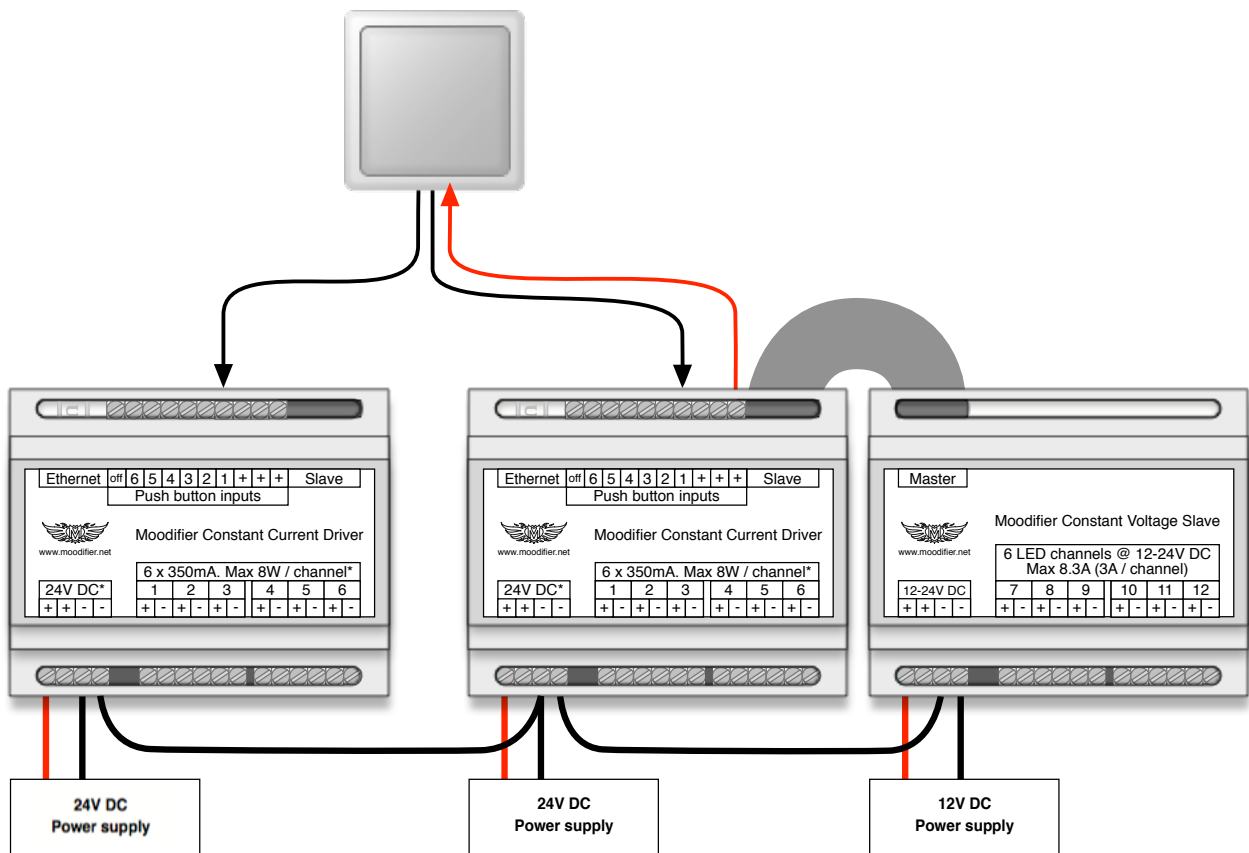
Push button 1-6

By closing a circuit between one of the three + connectors and any of the 1, 2, 3, 4, 5 or 6 push button channels a signal is sent to the Moodifier Constant Current Driver that activates/dims/deactivates the light scene that is set for that push button. Each push button can be set up to activate deactivate its own light scene. Dimming is achieved by holding in the push button.

Connecting multiple Moodifier units to a single push button

One push button can be wired to control multiple Moodifier units. If doing so you will first need to make sure that all the Moodifier units use a common ground. This is easily accomplished by connecting a wire between the Moodifier units ground (-) connectors.

The push button is then connected so that, when pushed, it closes a circuit between **one** of the Moodifier units push button + ports and a given push button return channel on each Moodifier unit. The push button will then control the given push button channel on each Moodifier unit. See wiring diagram below.



The "off" push button connector

By closing a circuit between + and the "off" connector, all lights of the unit will be turned off.

Technical specification

Moodifier DIN-rail mounted Constant Current Driver

Connections

- 1 Network port (Ethernet)
- 4 ports for connecting and daisy chaining a 12-24V or 36V DC power supply
- 1 port for connection of a Slave unit
- 10 sockets for connecting up to 6 wall mounted push buttons
- 12 sockets (6 channels) for connecting up to 75W of LED lights or other 350mA constant current powered equipment

Technical data

Power supply	12-24V DC
LED channels	6
Current per LED channel	350mA
Max load @ 24V DC	50W
Max load per LED channel @ 24V DC	0 - 8.4W
Max load @ 12V DC	25W
Max load per LED channel @ 12V DC	0 - 4.2W
Push button functions	6 (+ off)
Network	Ethernet 10/100
PWM Frequency	480Hz - 4.8kHz (adjustable)
Overheat protection	Yes
Over current protection	Yes
Conforms to European EMC regulations	Yes
CE marked	Yes
Dimensions (WxHxD)	104x85x60mm
Ambient temperature (in operation)	0-35°C

Moodifier DIN-rail mounted Constant Current Slave

Connections:

- 4 ports for connecting and daisy chaining a 12-24V or 36V DC power supply
- 12 sockets (6 channels) for connecting up to 75W of LED lights or other 350mA constant current powered equipment
- 1 connector for connection to master unit

Technical data

Power supply	12-24V DC
LED channels	6
Current per LED channel	350mA
Max load @ 24V DC	50W
Max load per LED channel @ 24V DC	0 - 8.4W
Max load @ 12V DC	25W
Max load per LED channel @ 12V DC	0 - 4.2W
PWM Frequency	480Hz - 4.8kHz (adjustable)
Overheat protection	Yes
Over current protection	Yes
Conforms to European EMC regulations	Yes
CE marked	Yes
Dimensions (WxHxD)	104x85x60mm
Ambient temperature (in operation)	0-35°C

Planing your lighting

In order to get the maximum value and pleasure from your Moodifier lighting it is important to plan how you want your lighting to work. Each LED channel on the Moodifier Constant Current Driver and Slave can be controlled individually (switched on/of or dimmed)

If you want to be able to light up a wall or some other part of a room individually you should dedicate one or more LED-channels for that purpose.

If you want to colour-change the lighting with RGB lights that have 6 wires (one positive and negative for each colour, red, green and blue) you need to dedicate 3 LED-channels for that purpose. Keep in mind that coloured light is not visible unless it hits a surface. If you want to colour a room with light you should direct the lights to the walls and ceiling, not to the centre of the room. A good comparison is to think of it as if you were painting with light.

By planning your lighting well you will be able to create unique mood-setting atmospheres with astonishing effects.

Electric cable recommendations

When connecting LED lights to the Moodifier Constant Current Driver and Slave units it is recommended that you use a copper cable with a diameter of about 0.51mm = area of 0.205mm² = AWG 24 or wider. A standard Cat5e or Cat6 ethernet cable will do fine in most cases for cable lengths of up to 25-30 meters (50-60 meters back and fourth).

Smart wiring & installation

Using an 8 wire (4 wire pairs) cable you can connect 4 Moodifier LED channels with one cable. Each LED channel can power up to 8W of LEDs. Using the Moodifier MMT 3.6W series of LED downlights you can connect up to 2 LED downlights to each LED channel. The 4 channels and cable pairs will let you connect up to 8 MMT 3.6W LED downlights with the same cable.

How to connect 4 LED channels with one 8 wire cable

Presuming you are installing the Moodifier MMT (3.6W) series of LED downlights.

Simply pull out an 8 wire cable (4 pairs) from the Moodifier Constant Current Driver/Slave unit to where up to 8 LED lights are located. Pull the cable from one light to the next. Leaving a spare 50 cm or so of cable at each light location makes it easier to connect the lights later.

Connect the 4 wire pairs to 4 LED channels on the Moodifier Constant Current Driver/Slave unit, keep note of the wire colors that connects to the positive and negative poles of each channel (+ / -).

At the first light, carefully peel off the outer cable sealing so that the inner isolated wires are exposed. Cut one of the positive wires and serially connect the first LED light to it.

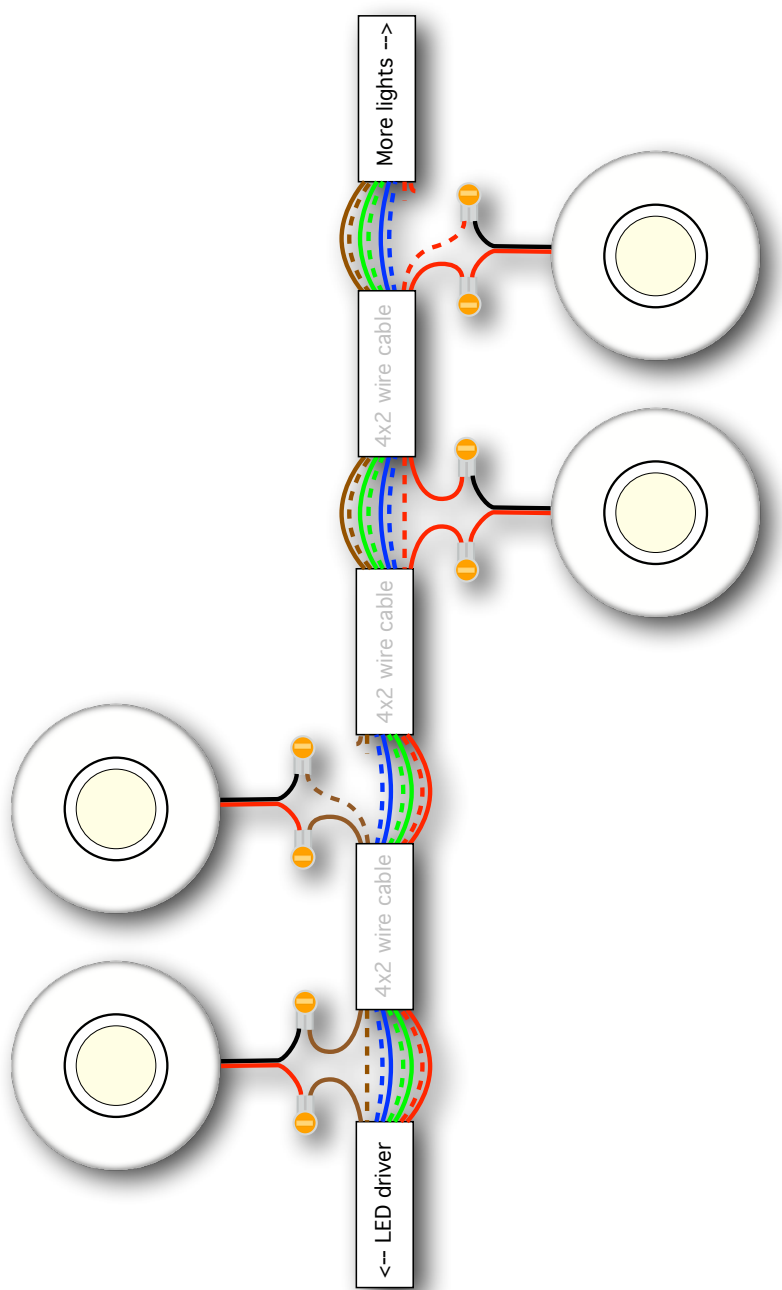
At the second light carefully peel off the outer sealing so that the inner wires are exposed. Cut the positive and negative wires of the wire pair that the first light was connected to and close the serial connection of the first and second light.

Proceed to the third and fourth lights and repeat the procedure using a different wire pair than the first two lights were connected to.

Repeat the procedure for the fifth/sixth and seventh/eighth lights.

If you are only connecting one light to any of the channels you simply close the serial connection for that LED channel with the first light.

See cable and wire connection images below



Software

The Moodifier applications are available as free downloads on:

<http://www.moodifier.net/software/>

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<http://www.moodifier.net>